



Real-Time Status

October 2001

(Revised Per AOG AI 0110-05)

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7 Oct 01



Overview

- **RTKS Delivery**
- **Future of LynxOS**
- **COE Realtime Assumptions/ Strategy**
- **CRCB Realtime Action Item Status**



Realtime Kernel Services (RTKS)

- **RTKS DSTRT 1.0.0.1 Delivery**
 - Delivered 21 Sep 01
 - Currently in testing
 - Available on JPL FTP sight
- **Next delivery of RTKS will not be scheduled until GSPRs are identified**
 - Indication of use!



Future of LynxOS

- **Need to determine which systems intend to use RTKS built on LynxOS**
 - What is their development schedule
- **LynxOS (running on specified HW) must go through KPC before it will be considered COE compliant**
 - KPC strategy is being worked
 - First step, define what platform should look like
 - Definition of requirements and level of assurance will drive specific test plan



Future of LynxOS

- **LynxOS is a COE reference implementation but it is NOT COE compliant yet because there is no infrastructure built on the RTKS**
- **DISA is committed to make fixes on the RTKS built on LynxOS if needed but will not port the current COE infrastructure services to run on top of it**
- **Any OS/platform combination (e.g., LynxOS, SGI, or Solaris on specified HW) must go through KPC before it will be considered COE compliant**
 - **Strategy for certifying a RT platform is being worked**
 - **Definition of platform, requirements, and level of assurance will drive specific test plan**



COE Realtime Assumptions

- **Improvement to existing COE needed to support realtime community**
- **Soft realtime with applicable APIs is achievable within existing COE**
- **Focus of effort should be on C2 customers**
 - **Visualization (e.g., COP)**
 - **Decision Makers**



COE Realtime Strategy

- **First Priority**

- Extend realtime capability within current DII COE framework to meet more robust system environments in support of Soft RT capabilities
- POSIX 54 adequately supports C2 RT applications

- **Second Priority**

- Define the interface between Hard/Embedded RT and extended DII COE

- **Third Priority**

- Establish a common reference implementation for Hard/Embedded RT environment
- Not funded, and no plans to address during 36-month plan timeframe



25Oct00 CRCB Action Items

- CRCB Action Item 00-017: COE to work through the AOG to determine if current realtime extensions plus POSIX 54-to-52 interface software fits within COE guidelines
- CRCB Action Item 00-020: COE to provide a plan for the development/acquisition of additional COE infrastructure to support realtime applications



Realtime Extensions plus POSIX 54-to-52 Interface

- CRCB action item: Work through the AOG to determine if current realtime extensions plus POSIX 54-to-52 interface software fit within COE guidelines
- Answer is yes. COE will support POSIX 54 and define interfaces as needed for COE platforms to receive and process data from POSIX 52 systems
- COE engineering office will continue working with Real Time Advisory Group on POSIX 54-to-52 interface design details



Army White Paper Review

Expansion of the DII COE to Support Co- Existent Realtime Domains on Army Platforms

- Coordinated effort between JPL and the Army
- Ensure mutual understanding of the Army's POSIX 54-52 interface picture presented at Oct00 CRCB
- Included mutual understanding to terminology
 - *Componentization* - the process of COE segments into discrete elemental building blocks (1 step beyond segmentation)
 - *Realtime* - the ability of a system to provide a required level of service in a bounded response



Army White Paper Recommendations

- Evaluate componentization of the COE
- Revisit RTKS reference implementation approach
 - Define procedures for certifying RT “platforms” (HW&SW) conformance to COE
- Gain solid requirements baseline for entire COE 5.x effort
 - ID which parts of baseline will be suitable for RT usage
- Develop guidelines to assist developers of new segments to provide information necessary to system integrators
- Investigate viability of executing segments



CRCB AI 00-020

- Plan for the development/acquisition of additional COE infrastructure to support realtime applications (Jan 02)
 - First task of the “COE Extension to Support RT Integration” Contract
 - Depends on service participation through teaming arrangements



COE Extension to Support RT Integration Contract

- Ocean System Engineering Corp (OSEC)
- Start date: 10Sep01 Duration: 1 year
- Tasks
 1. Engineering Analysis and Plan of Action (120 days)
 - Review RT requirements and available products from services, RTAG, etc.
 - Identify overlaps and holes in RT capability
 - Develop recommendation for way ahead



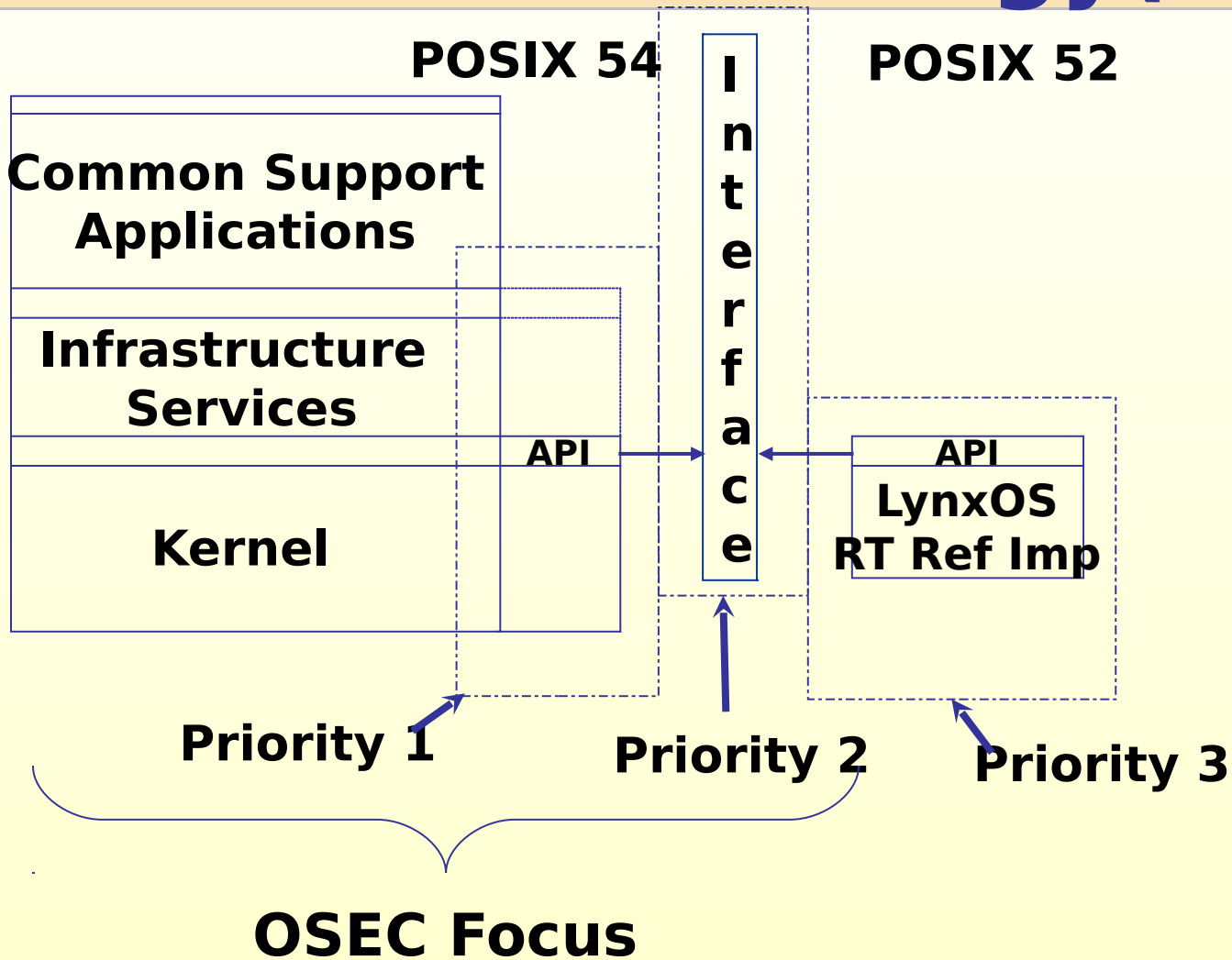
COE Extension to Support RT Integration Contract (Cont'd)

2. Initial Task Software Demonstration

- Integrate selected middleware & DII COE on target OS based on results of Engineering Analysis
- Integrate with specific COE components (e.g., Kernel vs. Infrastructure Services)
- Demonstrate effects on certain performance characteristics,
- Characterize effects on APIs



COE Realtime Strategy(Cont.)





Teaming Proposals

- **Looking for service participation (ergo, resource sharing) proposals for way ahead**
- **Leverage past/existing work as foundation**
- **Potential applicability of middleware in realtime space**



Realtime Resource Constraints

- **Current resources cover minimal maintenance of LynxOS reference implementation**
- **Proposed realtime approach requires additional resources**
 - **Resources have been requested through budget process**





Backup Slides

Backup Slides



Army White Paper Review

Expansion of the DII COE to Support Co-Existent Realtime Domains on Army Platforms

- Recommendations included:
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